Enhancing Physician Assistant Student Clinical Rotation Evaluations with the RIME Scoring Format: A Retrospective Three Year Analysis

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Disclosures

David J. Klocko, MPAS, PA-C has no relationships with any entity that markets, produces or sells healthcare goods, medications or services.
Time Machine.......
RIME:
A Reliable and Descriptive Method for Enhancing Physician Assistant Student Clinical Rotation Evaluations

David J. Klocko, MPAS, PA-C

Annual Education Forum, Physician Assistant Education Association, Quebec City, Quebec
March 2006
Reporter, Interpreter, Manager, Educator (RIME): A Novel Enhancement to Clinical Evaluation Methods

David J. Klocko, MPAS, PA-C
UT Southwestern Medical Center, Texas

In many physician assistant (PA) education programs, student evaluations are based on the Competencies for the Physician Assistant Profession. The reporter, interpreter, manager, educator (RIME) framework, developed by Louis Pangaro, MD, was added to the competency-based PA clinical rotation evaluation at one program to augment the assessment of PA students’ clinical skills development. Preceptors and students reported that feedback in evaluation sessions was valuable for end of rotation performance. The RIME categories add a standardized vocabulary for performance assessment and uses basic terms to help preceptors visualize students’ ongoing progress in developing clinical skills as they work with patients.

INTRODUCTION
In 2004, the Competencies for the Physician Assistant Profession document was developed, using the care, professionalism, practice-based learning and improvement, and systems-based practice. The reporter, interpreter, manager, educator (RIME) framework was added to the competency-based PA clinical rotation evaluation at one program to augment the assessment of PA students’ clinical skills development.
1. Learn about the RIME grading format.
2. Learn about how UT Southwestern implemented the use of the RIME format.
3. Analyze 3 years of student RIME scores, comparing them to the top and bottom quartiles of PANCE scores and end of rotation exam grades.
What is the RIME method of evaluation?

- A standardized vocabulary for clinical performance assessment.
- Basic terms to help visualize students ongoing progress in developing clinical skills as they work with patients.

Whitcomb ME, ed. The AAMC project on the clinical education of medical students. Washington, DC: American Association of Medical Colleges; 2005
R = Reporter

• Demonstrates accuracy when gathering and communicating clinical information, follows up on patient lab results and is reliable

• Good interpersonal skills, documentation and efficient use of time

I = Interpreter

• Prioritizes and assembles a reasonable differential diagnosis
• Follows up on diagnostic tests and analyzes the results
• Makes the emotional transition from bystander to active participant in patient care

M = Manager

- Demonstrates a better command of medical knowledge
- Has confidence in the ability to make decisions on patient management
- Tailors a plan to each patient
- Has sound interpersonal and procedural skills

E = Educator

• Beyond the basics in ability
• Reads deeply and shares new learning with others
• Develops relevant clinical questions and finds the best evidence to answer the question.
• Analyzes and applies evidence to the patient
• Leads and educates other members of the health care team.

Common Concerns Regarding Clinical Evaluation Methods

• Poor Inter/Intra-rater and Intercase reliability

• Common misconception that preceptor evaluation is too subjective which leads to grade inflation

• Does objectivity enhance validity and reliability?

• Does subjectivity equal poor validity and reliability?

• Many preceptors don’t evaluate with discrimination and consistency
Preceptor Development

• Site Visit
• “One Minute Preceptor”
• Review the Evaluation
• Provide “Competencies for the Physician Assistant Profession” journal article
• Review the RIME format; provide instruction sheet
Evaluation

Please review the attached evaluation. It was developed with the Accreditation Council for Graduate Medical Education (ACGME) six competency areas as a guide. In response to the development of the ACGME competencies, a collaborative effort between the National Commission on Certification of Physician Assistants (NCCPA), the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA), the Physician Assistant Education Association (PAEA), and the American Academy of Physician Assistants (AAPA) developed the “Competencies for the Physician Assistant Profession” which are reflected in this evaluation.

RIME Skill Levels for Physician Assistant Students

Please review the **R-I-M-E**, rubric that explains the Reporter – Interpreter – Manager – Education evaluation format. Please circle the category that best describes the PA student’s level of clinical ability at the conclusion of their rotation with you.

**Reporter**- The PA student can accurately gather and communicate the clinical facts of their patients. Mastery of obtaining a history and physical and knowing what to look for in a particular clinical situation are required. Good bedside skills are required.

**Interpreter**- The PA student can prioritize and assemble a reasonable differential diagnosis, follow up on diagnostic tests and analyze their results. The student must make the emotional transition from bystander to active participant.

**Manager**- The PA student is able to demonstrate a much better command of medical knowledge, and has the confidence and ability to make decisions on patient management. The student is able to tailor the plan to each patient problem. This student has sound interpersonal and procedural skills.

**Educator**- This PA student is beyond the basics in ability. They must be able to read deeply and share new learning with others. The student can derive relevant clinical questions and find the best evidence to answer the question, analyze and apply the information to their patients. There is a level of maturity and confidence to lead and educate the other members of the health care team.
Methods

• Data collected from the top and bottom quartiles of the PA Classes of 2010 to 2012:
  – **PANCE** scores
  – **End of Rotation** exam scores
  – **RIME** score totals from preceptor evaluations for all rotations
Methods

• Students in the top and bottom quartiles of PANCE scores with one missing RIME score were given a “3” = manager. n=4 (7.4%)

• Students in these quartiles with 2 missing RIME scores were omitted and the next rank ordered student was used. n=3 (5.5%)
Rotations

• All core rotation RIME scores:
  
  – Internal Med, Family Med = 8 weeks
  
  – Peds, OB/GYN = 6 weeks
  
  – EM, Psych, Surgery, ID = 4 weeks
## Settings, Students and Evaluators

<table>
<thead>
<tr>
<th></th>
<th>OUT PATIENT</th>
<th>INPATIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine</td>
<td></td>
<td>Academic Medical Center</td>
</tr>
<tr>
<td>Labor &amp; Delivery</td>
<td></td>
<td>Academic Medical Center</td>
</tr>
<tr>
<td>Surgery</td>
<td></td>
<td>Academic Medical Center</td>
</tr>
<tr>
<td>Psychiatry</td>
<td></td>
<td>Academic Medical Center</td>
</tr>
<tr>
<td>County Jail</td>
<td></td>
<td>Academic Medical Center</td>
</tr>
<tr>
<td>Surgery</td>
<td></td>
<td>Academic Medical Center</td>
</tr>
<tr>
<td>Infectious Disease</td>
<td></td>
<td>Academic Medical Center</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>Community Practice</td>
<td></td>
</tr>
<tr>
<td>Pediatrics</td>
<td>Community Practice</td>
<td></td>
</tr>
<tr>
<td>Gynecology</td>
<td>Community Practice</td>
<td></td>
</tr>
</tbody>
</table>
Evaluation Instrument

Developed using the “Competencies for the Physician Assistant Profession” with the Accreditation Council on Graduate Medical Education competencies as a guide.

The RIME format was added.

The evaluation was emailed to all preceptors using the E*Value system.
# CLINICAL ROTATION EVALUATION FORM

Student's Name: \\
Dates of Rotation: \\
Location: \\
Rotation: \\
Preceptor: \\
Level of interaction: [ ] Minimum [ ] Moderate [ ] Extensive

Directions: Grade by circling a single numerical score. Comments are required for any score of ‘1’ or ‘9’ at the end of this form.

## Patient Care

<table>
<thead>
<tr>
<th></th>
<th>Clearly inadequate; needs immediate remediation</th>
<th>Some deficiencies; needs improvement</th>
<th>Average performance, does not excel in any way</th>
<th>Exceeds minimum standards; excels in some areas</th>
<th>Superior in every way; excels in the top 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>History taking: accurate and complete</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Physical exam: needed components present</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Complete assessment and plans</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Provides quality patient education</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Discusses preventative care appropriately</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Case Presentation quality/clarity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Documentation complete and logical</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

## Medical Knowledge

<table>
<thead>
<tr>
<th></th>
<th>Clearly inadequate; needs immediate remediation</th>
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<th>Exceeds minimum standards; excels in some areas</th>
<th>Superior in every way; excels in the top 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall problem solving ability</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Anatomy and Pathophysiological knowledge</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Pharmacological knowledge and usage</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Appropriate selection of diagnostic tests</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Appropriate analysis of findings and test results</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

## Practice-based Learning and Improvement

<table>
<thead>
<tr>
<th></th>
<th>Clearly inadequate; needs immediate remediation</th>
<th>Some deficiencies; needs improvement</th>
<th>Average performance, does not excel in any way</th>
<th>Exceeds minimum standards; excels in some areas</th>
<th>Superior in every way; excels in the top 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiative/work ethic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Responds to feedback positively</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Extra research to optimize care</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Appropriately applies Evidence Based Medicine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Encourages a positive learning environment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>
### Interpersonal / Communication Skills and Professionalism

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<thead>
<tr>
<th>Skill</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creates an effective patient/provider relationship</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Communicates well with patient and team</td>
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<td>Sensitive to cultural, age, gender and disability issues</td>
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<tr>
<td>Demonstrates caring and respectful behaviors</td>
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<tr>
<td>Works well as part of a team</td>
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</table>

### Systems based practice

<table>
<thead>
<tr>
<th>Skill</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrates knowledge of medical delivery systems (coding, billing, insurances)</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Demonstrates appropriate referrals (nurse, PT, OT, dietician, counseling)</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Practice cost-effective medicine</td>
<td></td>
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<td></td>
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<td></td>
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</tr>
</tbody>
</table>

**Comments:** (Add addendum if necessary) Comments are required for any score of ‘1’ or ‘9’.

### Please indicate one:

- **Reporter**
  - Student accurately gathers and communicates the clinical facts of their patients. Mastery of obtaining a history and physical and knowing what to look for in a particular clinical situation are required. Good bedside skills are required.

- **Interpreter**
  - Student can prioritize and assemble a reasonable differential diagnosis, follow-up on diagnostic tests and analyze their results. Student must make the emotional transition from bystander to active participant.

- **Manager**
  - Student is able to demonstrate a much better command of medical knowledge and has the confidence and ability to make decisions on patient management. The student is able to tailor the plan to each patient problem. Student has sound interpersonal and procedural skills.

- **Educator**
  - Student is beyond the basics in ability. They must be able to read deeply and share new learning with others. Student can derive relevant clinical questions and find the best evidence to answer the questions, analyze and apply the information to their patients. There is a level of maturity and confidence to lead and educate the other members of the healthcare team.

<table>
<thead>
<tr>
<th>Preceptor Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>

### Absences

**Number of days absent / late**

**Names of others who participated in this evaluation:**

**Office Use Only:**

- **Reviewed by:**
- **Action Taken:**

Thank You for Your Time.
Descriptive Statistics
RIME Category Frequency: Clinical Rotation Performance

- Reporter
- Interpreter
- Manager
- Educator

- 2010 n=238
- 2011 n=252
- 2012 n=245

Total=735
RIME Aggregate Score Totals n=1107

2010-12

PANCE Top 25%

PANCE Low 25%
EOR Exam Scores, RIME & PANCE

PANCE Low 25 %: EOR Exam 83%, RIME Total 520, PANCE 511

PANCE High 25 %: EOR Exam 87%, RIME Total 557, PANCE 708
Is there a difference between the RIME scores of the top 25% of student PANCE performers compared to the bottom 25% of student PANCE performers over clinical rotations from 2010 to 2012?
Hypothesis

• Ho= There is no difference between the RIME and PANCE scores of the upper and lower 25% of the PA Classes of 2010-2012

• Ha= There is a difference between the RIME and PANCE scores of the upper and lower 25% of the PA Classes of 2010-2012
Method

• The top 25% (n=9) and bottom 25%(n=9) of the students in the PA Classes of 2010-2012(n=54) were ranked by order of PANCE score.

• The end of rotation RIME evaluation for each student was recorded for each core rotation (n=189).

• Each student’s RIME evaluation across 7 core rotations were totaled (n=54).
Data Analysis

A Wilcoxon Matched Pairs Signed Rank test was performed on the top/bottom 25% of the Classes of 2010-2012 (Xa= 27, Xb=27)
Data Analysis

• Wilcoxon Matched Pairs Signed Rank Test
• Non-parametric equivalent of the “t-test” for matched pairs of ordinal data
• Scoring
  – Reporter= 1
  – Interpreter= 2
  – Manager= 3
  – Educator= 4
Results Xa-Xb

• Alpha is set at 0.05

• Result:  \( P = 0.0324 \) (2-tailed)

• Conclusion: We can reject \( H_0 \) and conclude there is a statistically significant difference between the PANCE and RIME scores of the top 25% compared to the bottom 25%
Paired two tailed t-test: RIME Scores

Top Quartile
Mean 20.6 (1.57)  n=27

Bottom Quartile
Mean 19.25 (2.68)  n= 27

Result: Statistically significant difference of RIME scores of the top quartile compared to the bottom quartile of PANCE performers (p< 0.02)
Paired two tailed t-test: EOR Exams

**Top Quartile**
Mean 87.5 (2.59)  n=27

**Bottom Quartile**
Mean 83.5 (1.96)  n=27

Result: Extremely statistically significant of EOR exam scores for top quartile compared to the bottom quartile of PANCE performers (p<0.0001)
Question?

• Is there a correlation between RIME and PANCE Scores?
Additional Data Analysis

Pearson Correlations:

- RIME and PANCE scores
- RIME and EOR scores
Pearson Correlation: RIME + PANCE 2010-11

• Top 25 %  \( r = -0.22 \)

• Lower 25 %  \( r = 0.31 \)
Pearson Correlation: RIME + PANCE 2012

• Top 25%  r=0.35

• Lower 25%  r=0.05
Question?

- Is there a correlation between RIME and End of Rotation exam scores?
Pearson Correlation: RIME & EOR Exams

• Top 25%  $r = 0.38$

• Lower 25%  $r = 0.47$
Can a student’s RIME score be predictive of their End of Rotation exam score?
Linear Regression

• **RIME** score Independent Variable \((x)\)

• **EOR exam** score Dependent Variable \((y)\)
Top Quartile Regression

RIME Mean - 20.6

EOR Exam Mean - 87.5

$r^2$ = 0.01
Bottom Quartile Regression

**RIME** Mean 19.2

**EOR Exam** Mean 83.5

$r^2 = 0.011$
Is there any practical use for the RIME scoring in PA student evaluations?

• Assumption: “The student is expected to ‘progress’ in RIME scoring as rotations continue”.

• In addition to competency based evaluation use the RIME to assess students performance
### Example

<table>
<thead>
<tr>
<th></th>
<th>Rot 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>RIME Total</th>
<th>EOR Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student A</td>
<td>M</td>
<td>E</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>I</td>
<td>M</td>
<td>21</td>
<td>88.5</td>
</tr>
<tr>
<td>Student B</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>13</td>
<td>84.5</td>
</tr>
</tbody>
</table>

Student A - PANCE 800
Student B - PANCE 548
Limitations

• Inter-rater Reliability
  – All preceptors may not receive the “preceptor orientation” to RIME. (There is a detailed explanation on the evaluation form)
  – The RIME is highly subjective
  – The academic medical center faculty are more familiar with the RIME evaluation
Limitations

– Is there variability between PA, resident and physician graders?
Conclusions

Very weak or negative correlations exist between the RIME and PANCE scores for both cohorts.

There is a stronger (but still weak) correlation for the RIME and EOR scores.

Based on this limited analysis, there is a statistically significant difference (Wilcoxon Rank $p<0.03$) in the RIME scores of the top quartile of PANCE performers from the lower quartile of PANCE performers for the PA Classes of 2010-12.
Conclusions

**Pearson Correlations**

<table>
<thead>
<tr>
<th></th>
<th>RIME &amp; PANCE 2010-11</th>
<th>RIME &amp; PANCE 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>r = -0.22</td>
<td>r = 0.35</td>
</tr>
<tr>
<td>Bottom</td>
<td>r = 0.31</td>
<td>r = 0.05</td>
</tr>
</tbody>
</table>

Very weak or negative correlations between RIME and PANCE scores
Conclusions

RIME and EOR exam 2010-12

<table>
<thead>
<tr>
<th></th>
<th>RIME and EOR exam 2010-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>r = 0.38</td>
</tr>
<tr>
<td>Bottom</td>
<td>r = 0.47</td>
</tr>
</tbody>
</table>

Stronger correlations between the RIME and EOR scores

RIME = independent variable, EOR/PANCE = dependent variable
Conclusions

Regression analysis revealed no predictive value of RIME scores on EOR exam scores
Conclusions

The category that most students got scored most often is “Manager.” (n = 735)

There is an extremely statistically significant difference in the EOR exam scores of the upper and lower quartiles of the PANCE performers.

Can we conclude that EOR exams are more predictive of PANCE performance?
Recent work done with RIME.....


References


References